

WHAT IS CLAIMED IS:

1. A proppant, comprising:
a particulate sol-gel ceramic having a roundness and compressive strength suitable for use as a proppant.
2. The proppant of claim 1 in which the particulate sol-gel ceramic is made from an aluminosilicate.
3. The proppant of claim 2 in which the particulate sol-gel ceramic is made from a geopolymer.
4. The proppant of claim 2 in which the particulate sol-gel ceramic is made by blending, forming, and curing aluminosilicates at temperatures below 200°C.
5. The proppant of claim 4 in which the particulate sol-gel ceramic is made by blending, forming, and curing aluminosilicates at temperatures below 80°C.
6. The proppant of claim 1 in which the particulate sol-gel ceramic is made from phosphates and metal oxides.
7. The proppant of claim 1, 2, 3, 4, 5 or 6 in which the particulate sol-gel ceramic has an apparent specific gravity of 1.4 to 1.9 g/cm³.
8. The proppant of any of claims 1, 2, 3, 4, 5, 6 or 7 used in fracturing a well.
9. A method of manufacturing a proppant, the method comprising the steps of:
forming a sol-gel composition from ceramic precursors; and
shaping and curing the sol-gel composition to form particulate sol-gel ceramic having a roundness and compressive strength suitable for use as a proppant.

10. The method of claim 9 in which the sol-gel composition is a blend of aluminosilicates and aqueous solutions of alkali metal silicates.
11. The method of claim 10 in which the aluminosilicates comprise geopolymers.
12. The method of claim 9 in which the sol-gel composition comprises a blend of phosphates and metal oxides.
13. The method of any one of claims 9, 10, 11 or 12 in which blending, forming and curing is carried out at temperatures below 200°C.
14. The method of claim 13 in which blending, forming and curing is carried out at temperatures below 80°C.
15. The method of any one of claims 9, 10, 11, 12, 13 or 14 in which shaping and curing the sol-gel ceramic comprises:
 - forming spheroidal pellets;
 - smoothing the spheroidal pellets; and
 - curing the spheroidal pellets.
16. The method of claim 15 in which curing the spheroidal pellets comprises curing the spheroidal pellets in a rotary kiln.
17. The method of claim 16 in which curing takes place at a temperature greater than 30°C.
18. The method of any one of claims 9, 10, 11, 12, 13, 14, 15, 16 or 17 further comprising coating the particulate sol-gel ceramic.
19. The method of claim 18 in which the particulate sol-gel ceramic is coated with a film of one or more epoxy, furan or phenolic resins.

20. The method of any one of claims 9-19 in which the particulate sol-gel ceramic has an apparent specific gravity of 1.4 to 1.9 g/cm³.
21. Proppant made by the method of any one of claims 9-20.
22. Proppant of claim 21, further comprising fillers.